

Uniaxially aligned electrospun nanocomposite prepared through a novel processing technique. / S. Karimi, N. Tucker, A. Fessard, N. Bunk, M. P. Staiger. / Nano Studies. – 2015. – # 12. – pp. 71-78. – eng.

Uniaxially aligned poly(vinyl alcohol) fibers were electrospun using a proprietary gap spinning method. Epoxy based composite films reinforced with low volume percentage (0.13 vol. %) of electrospun nanofibers were prepared using two different processing routes; a conventional wet lay-up and a novel electrospaying technique. The effects of the processing method on the properties of the fabricated materials were studied using scanning electron microscopy, tensile tests, dynamic mechanical analysis and thermogravimetric analysis. The results of the mechanical and thermal studies revealed property enhancement by changing the processing route to the electrospaying technique. This is ascribed to an increased level of fiber / matrix interaction and a more efficient interfacial adhesion compared to the materials prepared through the conventional wet lay-up method. A significant boost of 7 and 2.5 folds in tensile strength and Young's modulus was observed for the specimen fabricated using electrospaying technique, compared to the neat matrix. Fig. 4, Ref. 19.

Auth.